Lycopodiophyta

Key 1.

1. Leaves linear, not scalelike; stem not evident; plants seemingly bulbous ..... *Isoëtaceae*
1. Leaves triangular, scalelike; stems evident; plants not appearing bulbous.
   2. Sporangia in terminal, flattened or 4-seided strobili; plants heterosporous ..... *Selaginellaceae*
   2. Sporangia on unmodified microphylls or in terminal, cylindrical strobili; plants homosporous ..... 1. *Lycopodiaceae*

Key 2.

1. Plants homosporous; ligule not present ..... 1. *Lycopodiaceae*
1. Plants heterosporous; ligule present.
   2. Leaves triangular, scalelike; stems evident; base not appearing bulbous ..... 2. *Selaginellaceae*
   2. Leaves linear, not scalelike; stems not evident; base appearing bulbous ..... *Isoétaceae*

1. **Lycopodiaceae**

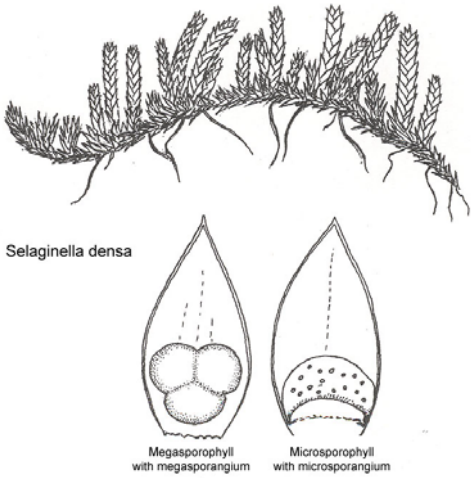
Taxa homosporous. Plants herbaceous, terrestrial, forming loose mats on rocks or in duff or epiphytic. Upright shoots simple or dichotomously branched, usually conspicuously leafy, at least near the base. Leaves spirally arranged. Strobili sessile or stalked, upright, nodding or pendent. Sporangia solitary, axillary or adaxial and near the base of the leaf.

The *Lycopodiaceae* is now thought to have 10–15 genera with 350–400 species but, in older floras, you will find all the species included in a single genus, *Lycopodium.*

Only one species of the *Lycopodiaceae* is reported as growing in Utah. *Lycopodium annotinum.* It remains in *Lycopodium* even if 15 genera are recognized in the *Lycopodiaceae. Flora of North America* volume 2 shows *Lycopodium annotinum* as growing in Utah but I am unaware of any herbarium records supporting the report of its occurrence in Utah. It is not included in Welsh et al. (1993), nor Cronquist et al. 1972.

2. **Selaginellaceae**

Taxa heterosporous. Plants herbaceous, usually terrestrial, sometimes epiphytic, forming loose mats or dense tufts. Stems prostrate, decumbent, or upright; not, slightly, or densely branched; roots branching dichotomously. Leaves monomorphic or dimorphic; if monomorphic leaves linear to narrowly lanceolate, strongly overlapping, and spirally arranged, if dimorphic, round or oblong to lanceolate, 4-ranked, lateral leaves large and spreading, median leaves small and appressed. Megasporangia lobed to ovoid; microsporangia reniform to ovoid or globose.



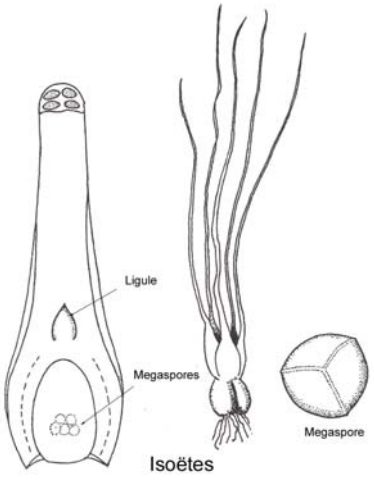
There are probably around 700 extant species of *Selaginellaceae*, with five being known from Utah but only two from northern Utah. Most species grow in tropical to subtropical regions.

The *Selaginellaceae* is sometimes treated as having one genus and five subgenera, sometimes as five genera. Utah's species all belong to subg. *Tetragonostachys* which is characterized by its 4-sided strobili, dentate or serrate, but not spiny leaves, and the presence of rhizophores (root bearing shoots).

1. Leaves tapering to the apices, bristle-tipped, the bristles 1–2 mm long.....*S. densa*
1. Leaves abruptly acute, bristle-tipped, the bristles 0.25–0.5 mm.....*S. watsonii*

3. **Isoëtaceae**

Taxa heterosporous. Plants tufted, grasslike, aquatics or ephemeral terrestrials. Rootstock cormous, lobed; roots simply or dichotomously branched. Leaves linear, spirally or dichotomously arrange, bases dilated, apices tapering; with four longitudinal lacunae; ligules present above the sporangia. Magrsporophylls and microsporophylls usually in alternating cycles. Sporangia adaxial; megasporangia with several to hundreds of megaspores; microsporangia with thousands of microspores.



There is only one genus, *Isoëtes*, in the *Isoëtaceae*, and around 150 species, four of which occur in Utah, including northern Utah. The herbarium has specimens from around Dry Lake in Sardine Pass. I have never seen it alive. Identification requires having spores.

Isoëtes lacustris is reported as being present in the Uinta Mountains in the *Intermountain Flora* (Cronquist et al.), but no specimens are known. It has been omitted from the key.

1. Megaspores ridged, crested or spinose when examined at 30 magnification.....*I. echinospora*
1. Megaspores appearing weakly ridged or with small bumps at 30 magnification.
   2. Leaves to 20 cm long, abruptly tapering to the fine tips; sporophylls with hyaline margins extending less than 1 cm above the sporangia .....*I. bolanderi*
   2. Leaves to 25 cm long, gradually tapering to the tips; sporophylls with hyaline margins extending 1-5 cm above the sporangia.....*I. howellii*